BEFORE THE

ORIGINAL
FILE

PP-33
ET 92-28

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
TRW Inc.	)	
	)	
Application for Authority to Construct A Communications Satellite System for the Provision of Radiodetermination and Mobile Voice and Data Services	)	File No. 20-DSS-P-91(12)
Petition of TRW Inc. for Amendment of Sections 2.106 and 25.141 of the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to, Satellite Systems in the RDSS Bands	)	RM-7773
Request for Pioneer's Preference	)	File No. _____

REQUEST FOR PIONEER'S PREFERENCE

TRW Inc. ("TRW"), by its attorneys and pursuant to Section 1.402 of the Commission's rules, hereby requests that the Commission grant it a pioneer's preference in connection with its above-captioned application for authority to establish the "Odyssey" satellite system ("Odyssey Application") and its related petition for rule making ("Petition"). The Petition seeks changes in Sections 2.106 and 25.141 (formerly Section 25.392) of the Commission's rules, 47 C.F.R. §§ 2.106 and 25.141, to allow the introduction of spread spectrum mobile voice and data services into the radiodetermination satellite service ("RDSS") frequency bands, permitting their utilization

to provide Mobile-Enhanced Radiodetermination Satellite Service ("M-E RDSS").

On May 31, 1991, TRW filed an application seeking authority to construct an M-E RDSS system which it has designated "Odyssey."[1/] In order to permit the construction of such a system, TRW submitted its Petition on July 9, 1991, which also sought a pioneer's preference in conjunction with TRW's implementation of its proposal. At the Commission's request, TRW now resubmits its request for a pioneer's preference as a separate filing. As demonstrated herein, the Odyssey system meets and surpasses the Commission's criteria for demonstrating entitlement to a pioneer's preference, and TRW respectfully urges that its request be granted.

I. TRW's Implementation Plan For The Odyssey System

Over the last several years, the state of technological development has advanced to the point where it is economically and technically practicable to provide mobile satellite voice and data services that are compatible with the RDSS "baseline" that the Commission established in the mid-1980's. It also is now clear, with the recent failure of the last remaining permittee of a "pure" RDSS system, that the establishment of a satellite system for the provision of "pure"

1/ See TRW Odyssey Application, File No. 20-DSS-P-91(12), filed May 31, 1991.

RDSS services is not presently an economically-viable proposition. Seizing upon these two developments, TRW has proposed an innovative satellite system that will provide the RDSS services contemplated by the Commission when it established that service, and also enhance greatly the utilization of the RDSS bands by providing fully compatible mobile voice and data satellite services for which there is tremendous untapped demand.

Because TRW's Odyssey system will allow provision of voice and data services that are compatible with the Commission's current RDSS allocation, TRW does not seek a specific new frequency allocation for the RDSS bands. Instead, TRW seeks amendments to Sections 2.106 and 25.141 of the Commission's rules that will permit satellite system operators to provide spread spectrum mobile voice and data services -- in addition to RDSS services -- in the RDSS bands.2/

As explained in the Odyssey Application, TRW's Odyssey system will consist of 12 satellites, four each in three orbital planes, that will operate in medium Earth orbit at altitudes of 5,600 nautical miles. Initially, the system will be able to provide communications links between mobile and fixed users, or between pairs of mobile users, everywhere in the United States (including Hawaii, Alaska, and Puerto Rico),

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2/ See TRW Petition for Rule Making and Request for Pioneer's Preference, RM-7773, filed July 8, 1991.

and almost anywhere in North America. With the addition of gateway earth stations around the world, Odyssey's twelve satellites will be able to provide virtually global coverage.

Odyssey will revolutionize the use of the RDSS bands by providing not only radiolocation and radionavigation services to users on land, at sea, and in the air, but also by making capacity available for cellular telephone and mobile data services on a universal-access basis. Odyssey will enhance the utilization of the RDSS bands in this manner, and its mobile voice and data services will have a positive impact on the cellular radio industry by expanding system coverage into areas and markets that are not presently open to terrestrial cellular systems for economic or technical reasons.

Mobile users of the Odyssey system will access the system via inexpensive hand-held transceivers that will operate with as little as 0.5 Watts of transmitted power. Each subscriber will have access to at least two Odyssey satellites at all times. Spectrum efficiency is promoted by the fact that Odyssey's multi-cell beam configuration reuses the spectrum 6.3 times.

TRW's Odyssey system employs code division multiple access ("CDMA") spread spectrum modulation techniques in both the RDSS band uplinks and downlinks. TRW's proposal to provide spread spectrum mobile voice and data services in the RDSS bands, in addition to radiodetermination services, is a

significant and innovative new use of these bands, as the provision of co-primary mobile voice and data services is not specifically authorized by the Commission's rules.[3/] Nevertheless, the spread spectrum mobile voice and data services to be provided via Odyssey -- with the exception of the power flux density limitations in S-Band RDSS transmissions (for which TRW has requested a modest waiver) -- are compatible with the RDSS standards promulgated by the Commission in its RDSS Licensing Order.[4/]

In sum, by combining mobile voice and data satellite service capability with radiodetermination satellite services in a system that will generally be compatible with the Commission's RDSS rules and policies, TRW's Odyssey system stands poised to deliver a number of benefits to the public. These benefits are described in detail in TRW's Odyssey Application, and include the following:

- Radiolocation, voice and data services to mobile users in all 50 states and U.S. territories, much of Canada and virtually all of Mexico;
- Low communication time delay compared to geostationary satellites to facilitate interactive voice communications;

3/ See 47 C.F.R. § 25.141(d) (1991).

4/ See Amendment of the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to, a Radiodetermination Satellite Service, Second Report and Order, 104 F.C.C.2d 650 (1986).

- High elevation angles to minimize obstruction by trees, buildings and terrain shadowing; and
- Inexpensive service to underserved segments of society, including emergency service providers, farmers and ranchers, truckers and travellers in rural areas, and ships and airplanes.

Through its Odyssey system, TRW thus offers an innovative communications satellite system that will greatly enhance the efficient use of the RDSS bands.

II. TRW's Innovative Service Is Deserving of A Pioneer's Preference

The Commission's new pioneer's preference rule, 47 C.F.R. § 1.402, is designed to permit those developing and implementing innovative technologies to receive preferential treatment in a licensing proceeding for new or enhanced services.[5/] In embracing the concept of a "pioneer's preference," the Commission expressed its belief that it would foster both the development of new services and the enhancement of existing ones by reducing the delays and risks faced by innovators.[6/]

5/ Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services, 69 R.R.2d 141 (1991).

6/ Id. at 142.

In the Pioneer's Preference Order, the Commission announced that a preference will be granted to an applicant proposing "to provide either a service not currently provided or a substantial enhancement to an existing service."[7/] As detailed above, TRW's proposal will satisfy both of these criteria. First, the Odyssey system will permit the long-authorized (but never operational) RDSS service to become a reality. Second, it will utilize new technology to offer other publicly-beneficial services not envisioned when the service was established. The Odyssey system's ability to provide fully compatible mobile voice and data satellite services will not only serve the public interest by meeting unsatisfied demand in these areas, it will do so in a highly spectrum efficient manner.

Indeed, the Odyssey system squarely promotes each of the interests listed by the Commission as guiding factors in its consideration of requests for preferential grants. These include "added functionality," different use of spectrum than previously available, a change in the operating or technical characteristics of a service, efficient spectrum use, enhanced speed or quality of information transfer, spectrum sharing, and reduction of costs to the public.[8/] The Odyssey system

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7/ Id. at 149.

8/ Id.

incorporates every one of these aspects, ample evidence that TRW is proposing the type of innovative spectrum use that the Commission intended to recognize with the pioneer's preference.

As the developer of the Odyssey system, TRW deserves the opportunity to bring this innovative technology to the marketplace. TRW has expended significant time and substantial company resources to refine spread spectrum technology and investigate new ways to provide a broad range of telecommunications services. These technological refinements have allowed it to conceive and design an RDSS system that is at once highly functional, technically feasible, and economically viable.[9/] This development process has drawn upon all aspects of TRW's broad experience as a pioneer and leader in satellite technology, experience which should allow expeditious inauguration of efficient, affordable service once the system is authorized.

Finally, because the new M-E RDSS service is inherently nationwide (indeed, international) in scope, the market guaranteed to TRW by a preferential grant also should be nationwide. Other inherent characteristics of the M-E RDSS service -- in particular, the use of spread spectrum technology

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9/ A comprehensive demonstration of the technical feasibility of the Odyssey system, and of TRW's technical qualifications to implement that system, are presented in TRW's Odyssey system application. See TRW Odyssey Application at Section IV.

-- will allow competing companies to provide service on shared frequencies throughout the same broad market. Thus, the grant of a nationwide pioneer's preference is both warranted and reasonable.

III. Conclusion

For the foregoing reasons, TRW respectfully requests that the Commission grant it a pioneer's preference to operate its Odyssey system using the frequencies 1610-1626.5 MHz in the L-band and 2483.5-2500 MHz in the S-band, with feeder links at 19.7-20.2 and 29.5-30.0 GHz in the Ka-band.

Respectfully Submitted,

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